Remarks

Claims 1, 9 and 17 have been amended, claims 8 and 24 have been canceled.

Reconsideration and allowance of the pending claims are respectfully requested.

Specification objection

The Office Action objected to non-statutory subjects in paragraph 0009 (the

paragraph number in the Office Action seems to be incorrect). Applicant has amended

the specification by canceling the related subjects from paragraph 0009. Withdrawal of

the present objection is respectfully requested.

Claims Rejections Under 35 U.S.C. 101

The Office Action rejected claims 1-24 under 35 U.S.C. 101 for nonstatutory

subject matter. Applicant has amended independent claims 1, 9 and 17 to be limited to

a substantial practical application. In other words, the algorithm of claims 1, 9 and 17

would generate a featuring ranking list which would be used for data recognition in the

future. Paragraph 0017 states an example of the practical application. More

specifically, the feature ranking list can help to detect if a person has a disease or not

by checking his/her gene expression with the gene feature ranking list generated by

the algorithm. The algorithm of claims 1, 9 and 17 can be used in other applications of

data recognition. For example, it can be used for face recognition with face feature

ranking list generated by the algorithm.

In light of the above, Applicant respectfully submits that <u>final result</u> of the data recognition with the feature ranking list generated by the algorithm, e.g., disease detection and face recognition, meets the requirement of being "useful, tangible and concrete" set forth by the Office Action. Reconsideration and withdrawal of the present rejection are respectfully requested.

If Examiner disagrees with the above, Applicant respectfully requests Examiner to suggest a claim amendment complying with U.S.C. 101.

Claims Rejections Under 35 U.S.C. 112

The Office Action rejected claims 1-24 under 35 U.S.C. 112 for the unclearness of the term "utilizing". Applicant has changed the term into "based upon". Basically, there may be several ways of eliminating the at least one feature from the group based upon the value for each feature in the group, as stated in paragraph 0028 of the present application. For example, based upon different applications, a feature with minimum value or a feature with maximum value may be eliminated. Considering the different ways of feature elimination, Applicant respectfully submits that the claims as amended particularly and distinctly claim the subject matter. Reconsideration and withdrawal of the present rejection are respectfully requested.

Claims Rejections Under 35 U.S.C. 102

The Official Action rejected claims 1-5, 7-21, 23 and 24 under 35 USC 102(b) as being anticipated by Cristianini. Applicant respectfully requests reconsideration and withdrawal of the present rejection.

As is well-established, in order to successfully assert a prima facie case of anticipation, the Office Action must provide a single prior art document that includes every element and limitation of the claim or claims being rejected. Therefore, if even one element or limitation is missing from the cited document, the Office Action has not succeeded in making a prima facie case.

Claims 1-7 and 17-23 rejections

Each of claims 1 and 17 recites a method comprising: ......; **eliminating** at least one feature from the group **based upon the value** for each feature in the group; **updating the value** for each feature in the group based on a part of the training data that corresponds to the eliminated feature; **repeating of eliminating** the at least one feature from the group **and updating** the value for each feature of the group until a number of features in the group reaches a predetermined value to generate a feature ranking list...., is unanticipated by Cristianini.

Cristianini teaches support vector machines (SVM) and other kernel-based learning methods, in which the portion cited in the Office Action (i.e., Chapter 3) is related to a method of projecting data into a high dimensional feature space by use of

kernel representations. According to Chapter 3, the representation of an input data is changed by mapping the input space of the data into a feature space (section 3.1); kernel is computed based upon the new representation of the data (sections 3.2 and 3.3); and the data may be classified by using a decision rule on the data mapped in the feature space, in which the decision rule is evaluated with the kernel computed as the above (section 3.2). As stated in Page 29 of Cristianini, during the process of changing the data representation, in order to select suitable representation, a feature selection is performed. More specifically, features corresponding to directions in which the data have low variance are eliminated.

Applicant respectfully submits that Cristianini teaches away from the invention of claims 1 or 17 because of the following reasons:

Firstly, The Office Action appears to regard the value obtained from evaluating the decision rule as the value of claims 1 and 17. However, page 29 of Cristianini teaches the features are eliminated based upon the data variance, rather than the value obtained from evaluating the decision rule. Further, from Chapter 3, feature elimination happens <u>before</u> the kernel computation and the decision rule evaluation. Therefore, Applicant can not figure out how the features of Cristianini are eliminated based upon the value generated after the feature elimination. In view of this, Cristianini does not teach eliminating at least one feature from the group based upon the value for each feature in the group, as requested by claims 1 and 17.

Secondly, Cristianini teaches kernel computation in sections 3.2 and 3.3. However, Cristianini does not mention anything about updating the kernel and the result of decision rule evaluation, no to say updating them based upon a part of the training data that corresponds to the eliminated features. Here, Applicant respectfully submits that computing the value is different from updating the value, wherein the latter should be performed after and based upon the former. Reasons for that may comprise that Cristianini is related to a SVM method, but not to a SVM-RFE method, i.e., recursive feature eliminating based on a SVM method. In other words, the SVM method of Cristianini performs feature elimination, kernel computation, and decision rule evaluation <u>only once</u> so that the input data can be classified. However, it does not update the kernel and the decision rule evaluation and repeat the updating, in order for recursive feature elimination.

Thirdly, the Office Action appears to rely on page 45 of Cristianini for the teaching of repeating eliminating the at least one feature and updating the value. Applicant respectfully submits that page 45 teaches a method of computing the kernel, wherein the kernel K_n is computed based upon a recursive computation of function K_i', wherein $i = 1,.....n-1$. Function K_i' is generated in order to compute the kernel, but function K_i' itself is different from the Kernel K_n, based upon the definitions of the Kernel K_n and the function K_i' in section 3.3, example 3.3.3. In other words, function K_i' is not a kernel as defined. In view of this, the kernel K_n is <u>computed once</u>, and therefore there is no concept of repeating updating the kernel.

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"Recursive" as page 45 does not mean "repeating" a same process (e.g., repeat updating the kernel), but mean "returning" to a former element (e.g., return to function K_i').

Further, Applicant respectfully submits that Cristianini does not teach repeating the feature eliminating. Section 3.3 teaches kernel computation, but not mention anything about feature eliminating. According to Cristianini, the feature eliminating is performed once before Kernel computation (see section 3.1).

Since Cristianini provides no teaching in regard to **eliminating** at least one feature from the group **based upon the value** for each feature in the group; **updating the value** for each feature in the group based on a part of the training data that corresponds to the eliminated feature; **repeating of eliminating** the at least one feature from the group **and updating** the value for each feature of the group until a number of features in the group reaches a predetermined value to generate a feature ranking list...., Cristianini does not anticipate claim 1 and 17.

Claims 2-7 and 18-23 depending on claim 1 or 17 are at least allowable for the reasons noted above.

Further, Applicant noticed that the Office Action does not mention **claims 6 and 21** in U.S.C. 102 rejection opinions. Does Examiner think they are allowable if rewriting them to depend on claim 1 or 17?

Claims 9-16 rejections

For similar reasons proffered to claims 1 and 17, claim 9 of the current invention defines an eliminate logic to **eliminate** at least one feature from the group **based upon the value** for each feature in the group, wherein the training logic further **updates the value** for each feature in the group **based on** a part of the training data that **corresponds to the eliminated feature**, and the apparatus further **repeats eliminating** the at least one feature from the group and **updating** the value for each feature of the group until a number of features in the group reaches a predetermined value to generate a feature ranking list for a use of recognizing a new data corresponding to the group of features, is unanticipated by Cristianini.

Each of claims 10-16 include claim 9 as a base claim and are therefore allowable for at least similar reasons. Applicant respectfully requests the present rejection of claims 9-16 be withdrawn.

Conclusion

The foregoing is submitted as a full and complete response to the Official Action. Applicants submit that the application is in condition for allowance. Reconsideration is requested, and allowance of the pending claims is earnestly solicited.

Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666. If the Examiner believes that there are any informalities, which can be corrected by an Examiner's amendment, a telephone call to the undersigned at (503) 439-8778 is respectfully solicited.

Respectfully submitted,

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